

U.S. Serial No. 10/733,289

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IN THE CLAIMS

1-30. (Canceled).

31. (New) A power amplifier module including a power amplifying circuit for use in a mobile communication device, comprising:

a module board having a plurality of wirings on an upper surface thereof and external electrode terminals on a lower surface thereof;

a first semiconductor chip disposed over the upper surface of the module board;

a second semiconductor chip overlapped to and above the first semiconductor chip with a gap therebetween;

a first conductive wire electrically connecting the first semiconductor chip and a first wire connection pad disposed over the upper surface of the module board;

a second conductive wire electrically connecting the second semiconductor chip and a second wire connection pad disposed over the upper surface of the module board; and

an insulating resin covering the first and second semiconductor chips,

wherein the power amplifying circuit is comprised of a multi-stage cascade connection of transistors;

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the first semiconductor chip includes a final-stage transistor in the multi-stage cascade connection of the transistors;

the second semiconductor chip includes a control-use transistor which controls the final-stage transistor;

the module board has an electrically conductive support on the upper surface thereof;

the second semiconductor chip is disposed on the support;  
a reference potential electrode is formed on a lower surface of the second semiconductor chip; and

the support on the module board is electrically connected with the reference potential electrode.

32. (New) The power amplifier module according to Claim 31, wherein a heat radiation pad is formed on the lower surface of the module pad;

a first via hole and a second via hole are formed in the module board, said first and second via holes extending from the upper surface to the lower surface of the module board;

a first conductive film and a second conductive film are formed in the first and second via holes, respectively;

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a lower surface of the first semiconductor chip and the heat radiation pad are electrically connected via the first conductive film in the first via hole; and

the support and the heat radiation pad are electrically connected via the second conductive film in the second via hole.

33. (New) The power amplifier module according to Claim 31, wherein the second semiconductor chip includes a first-stage transistor in the multi-stage cascade connection of the transistors.

34. (New) The power amplifier module according to Claim 31, wherein a recess portion is formed on the upper surface of the module board; and

the first semiconductor chip is disposed in the recess portion.

35. (New) The power amplifier module according to Claim 31, wherein the first semiconductor chip generates more heat than does the second semiconductor chip.

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36. (New) The power amplifier module according to Claim 31, wherein the reference potential electrode is electrically coupled with a ground potential.

37. (New) The power amplifier module according to Claim 31, wherein a passive part is disposed over the upper surface of the module board.